

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
							February 2004	
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5					SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost		26.120	24.300	51.213	45.656	48.934	48.065	34.263
0173 / NATO SEASPARROW		5.779	15.368	21.351	5.642	4.868	4.938	5.029
0167 / 5" Rolling Airframe Missile		10.345	4.977	11.931	30.042	44.066	43.127	29.234
9081 / PHALANX CIWS SeaRAM		9.996	3.955	17.931	9.972			
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:								
This program element provides funding for the development of systems that fulfill a portion of the third phase of the ship self defense: Engage. Development in this line will focus on hard kill capabilities in which missiles are used to intercept incoming ASCMs.								
(U) ENGAGEMENT: Missile and system improvements necessary to meet their requirements are being addressed via NATO SEASPARROW Missile System (NSSMS) (0173), 5" Rolling Airframe Missile (RAM) (0167), and Phalanx CIWS SeaRAM (9081). Missile improvements are to include improved kinematic performance plus advanced seeker and low elevation fuzing/warhead capability improvements. System improvements include incorporation of Phalanx detection capability into RAM system (SeaRAM).								

R-1 SHOPPING LIST - Item No.

128

UNCLASSIFIED

# UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDTE, N / BA-05</b>		PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 0167 / ROLLING AIRFRAME MISSILE				
COST (\$ in Millions)			FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost			10.345	4.977	11.931	30.042	44.066	43.127	29.234
RDT&E Articles Qty									
<b>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</b> The purpose of this program is to develop a surface-to-air self-defense system utilizing a dual mode, passive Radio Frequency/Infrared 5" Rolling Airframe Missile. The baseline system (Block 0) provides a self-defense capability against active radar-guided anti-ship missiles and was developed on an equal cost share basis with the Government of the Federal Republic of Germany. The RAM Block 1 provides a capability against passive anti-ship missiles, very low altitude missiles, and maneuvering missiles through the incorporation of an infrared all-the-way mode seeker and improved fuze. The RAM Block 1 MOD 3 upgrade program, which provides an additional capability against helicopters, aircraft and surface craft, is a joint requirement of the U.S. and Federal Republic of Germany agreed to in a Memorandum of Agreement (MOA) signed by both parties. Since PB04, funding has been added (FY05-09) to initiate development and testing of a kinematic upgrade to the RAM missile. This upgrade will allow RAM to regain battlespace lost to emerging, more maneuverable ASCM threats. This system is designed to counter anti-ship cruise missile raids and other threats to provide for ship survivability with accurate terminal guidance, proven lethality, and no shipboard post launch dependence.									

R-1 SHOPPING LIST - Item No.

128

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<p><b>B. Accomplishments/Planned Program</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>RAM Block 1 Testing</td> <td style="text-align: center;">5.337</td> <td style="text-align: center;">3.028</td> <td style="text-align: center;">0.776</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">In FY03-05, this line funds Block 1 FOT&amp;E and government MOD 3 testing and analysis.</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>RAM Block 1 Eng//Interface Support</td> <td style="text-align: center;">1.311</td> <td style="text-align: center;">0.453</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">This line supports on-going efforts in developing RAM interfaces with External Designation Systems (EDS).</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>Improvement for Missile Deficiency</td> <td style="text-align: center;">3.544</td> <td style="text-align: center;">1.340</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">FY03-04 funding completes the improvement of missile capability deficiency against emergent threat.</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>Pre-Planned Product Improvement (P3I)</td> <td></td> <td></td> <td style="text-align: center;">11.000</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">FY05 funding initiates development of RAM kinematic upgrade.</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%; text-align: center;">FY 03</td> <td style="width: 15%; text-align: center;">FY 04</td> <td style="width: 15%; text-align: center;">FY 05</td> </tr> <tr> <td>Travel</td> <td style="text-align: center;">0.153</td> <td style="text-align: center;">0.156</td> <td style="text-align: center;">0.155</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table>					FY 03	FY 04	FY 05	RAM Block 1 Testing	5.337	3.028	0.776	RDT&E Articles Quantity					FY 03	FY 04	FY 05	RAM Block 1 Eng//Interface Support	1.311	0.453	0.000	RDT&E Articles Quantity					FY 03	FY 04	FY 05	Improvement for Missile Deficiency	3.544	1.340	0.000	RDT&E Articles Quantity					FY 03	FY 04	FY 05	Pre-Planned Product Improvement (P3I)			11.000	RDT&E Articles Quantity					FY 03	FY 04	FY 05	Travel	0.153	0.156	0.155	RDT&E Articles Quantity			
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R-1 SHOPPING LIST - Item No.

128

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>	PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 0167 / ROLLING AIRFRAME MISSILE

**C. PROGRAM CHANGE SUMMARY:**

	FY 2003	FY 2004	FY 2005
Funding:			
Previous President's Budget:	10.513	5.033	9.550
Current BES/President's Budget	10.345	4.977	11.931
Total Adjustments	-0.168	-0.056	2.381
Summary of Adjustments			
RAM P3I			11.000
Removal of FFG RAM Wedge			-8.000
Delay RAM Improvements			-0.500
FY03_SBIR_5-May-03	-0.141		
BSO ADJUSTMENTS	-0.027		
NWCF Rates - NSWC Rates			-0.115
Section 8094: Management Impr		-0.013	
Sec. 8126: Efficiencies/Revis		-0.043	
WCF R&D NSWC PBD 430			0.016
PBD 426 Rates NSWC			0.026
PBD-604 Inflation			-0.032
PBD604 non purchase inflation			-0.007
FY05 ITR RD TEN Balancing			-0.007
Subtotal	-0.168	-0.056	2.381

Schedule:

A Pre-Planned Performance Improvement upgrade will be initiated in FY05.

Technical:

Not Applicable.

R-1 SHOPPING LIST - Item No. 128

UNCLASSIFIED

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<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>									
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
<b>OPN LINE 523800 (RAM)</b>	\$27.115	\$31.068	\$22.968	\$77.972	\$69.811	\$34.822	\$11.045	\$63.771	\$857.376
<b>WPN LINE 224200 (RAM)</b>	\$59.163	\$47.956	\$47.412	\$135.900	\$70.311	\$99.219	\$102.197	\$555.700	\$1,298.000
<b>E. ACQUISITION STRATEGY: *</b>									
RAM Block 1 MOD 3 Development and Testing FY03-05; Improvement of missile capability deficiency against emergent threat FY2003-2004. Kinematic Upgrade (P3I) development FY05-09.									
<b>F. MAJOR PERFORMERS: **</b>									
Raytheon Systems Company - Tucson, AZ - RAM Prime Contractor for Development and Contractor Test and Evaluation. Award Dates: FY03 - 11/02; FY04 - 11/03; FY05 - 11/04									
Naval Air Weapons Center, China Lake - China Lake, CA - Missile ISEA supporting RAM development and testing. Award dates are N/A, since funding will be provided under NAVSEA Seatask to field activity.									
Naval Surface Warfare Center, Port Hueneme - Port Hueneme, CA - Launcher ISEA supporting development, testing, integration and test ranges. Award dates are N/A, since funding will be provided under NAVSEA Seatask to field activity.									

R-1 SHOPPING LIST - Item No. 128

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)								DATE: <b>February 2004</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>			PROGRAM ELEMENT 0604756N SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 0167 / ROLLING AIRFRAME MISSILE						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Raytheon Co, Tucson AZ & Louisville, KY		3.544	11/02	1.340	11/03		11/04	Continuing	Continuing	
Block 1 MOD 3 Interface Spt	SS/CPFF	Raytheon Co, San Diego CA										
Block 1 MOD 3 Interface Spt	CPFF	JHU/APL		0.400	11/02	0.408	11/03			Continuing	Continuing	
Block 1 MOD 3 Interface Spt	WX	NSWC/PHD		0.000		0.000				Continuing	Continuing	
Block 1 MOD 3 Eng	WX	NAWC/China Lake		0.911	02/03	0.045	11/03			Continuing	Continuing	
Block 1 MOD 3 IR Spt	WX	NRL								Continuing	Continuing	
Block 1 MOD 3 Sys Safety	WX	NSWC/DD										
Performance Improvement upgrade	SS/CPAF	Raytheon Co, Tucson AZ & Louisville, KY						8.995	11/04	Continuing	Continuing	
Performance Improvement upgrade	WX	CL/NRL/DD						1.705	11/04	Continuing	Continuing	
Performance Improvement upgrade	CPFF	JHU/APL						0.300	11/04	Continuing	Continuing	
Subtotal Product Development			0.000	4.855		1.793		11.000		Continuing	Continuing	
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

# UNCLASSIFIED

**CLASSIFICATION:**

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2004				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-05			0604756N SHIP SELF DEFENSE			0167 / ROLLING AIRFRAME MISSILE						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
DT&E/OT&E/FOT&E/CTE	SS/CPAF	Raytheon Co, Tucson AZ & Louisville, KY		1.244	11/02	0.534	11/03	0.000		Continuing	Continuing	
DT&E/OT&E	WX	China Lake CA, PHD CA		0.000		2.073	11/03	0.500	11/04	Continuing	Continuing	
FOT&E	WX	China Lake CA, PHD CA		3.266	02/03	0.000		0.000		Continuing	Continuing	
CTE Support	WX	NSWC/PHD CA		0.000		0.000		0.000		Continuing	Continuing	
Miscellaneous		Various		0.827	11/02	0.421	11/03	0.276	11/04	Continuing	Continuing	
P3I Development and Systems Engineering												
Subtotal T&E			0.000	5.337		3.028		0.776		Continuing	Continuing	

R-1 SHOPPING LIST - Item No. 128

# UNCLASSIFIED

**Exhibit R-3, Project Cost Analysis**  
(Exhibit R-3, page 7 of 26)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE:

February 2004

APPROPRIATION/BUDGET ACTIVITY

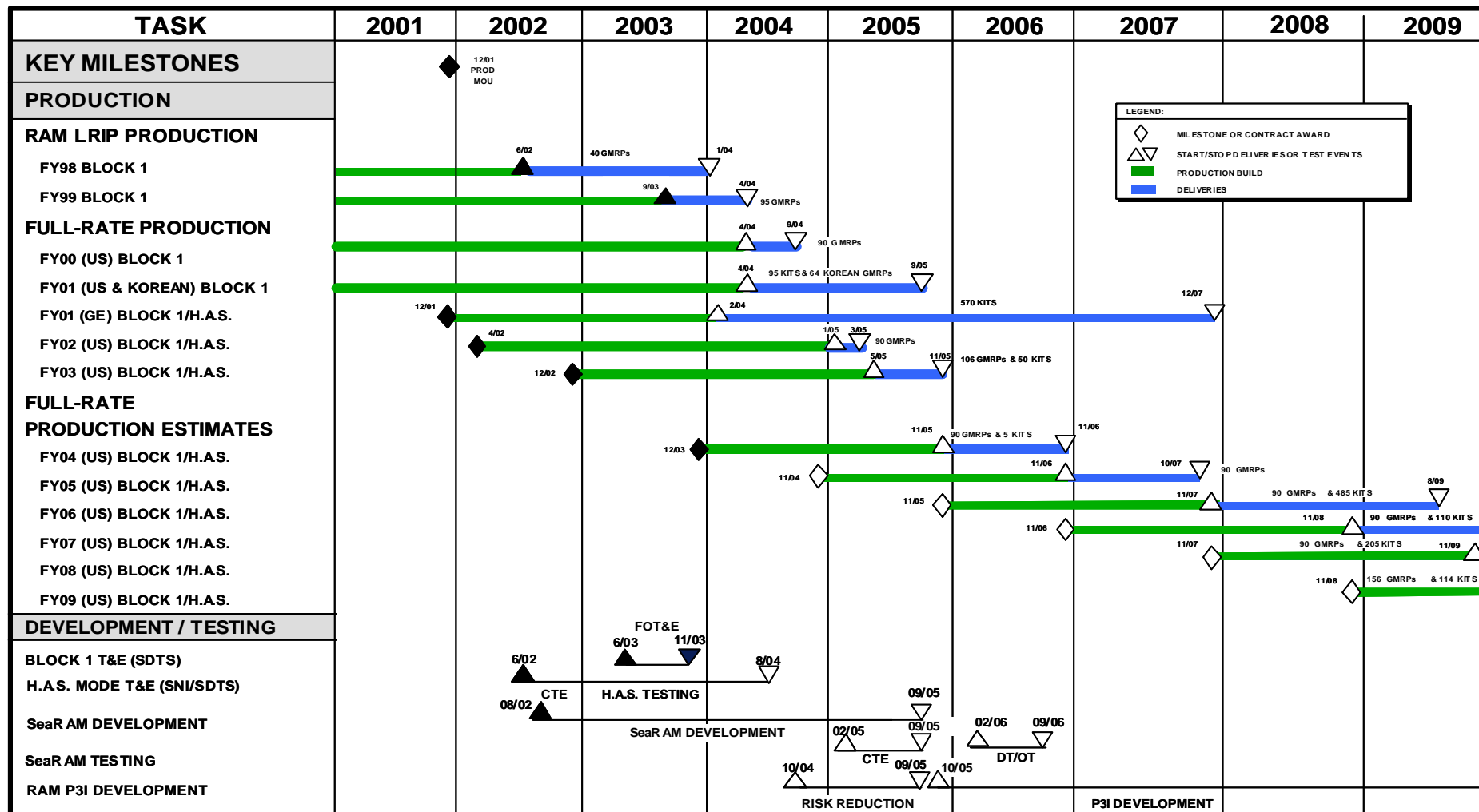
PROGRAM ELEMENT

PROJECT NUMBER AND NAME

RDT&amp;E, N / BA-05

0604756N SHIP SELF DEFENSE

0167 / ROLLING AIRFRAME MISSILE



R-1 SHOPPING LIST - Item No. 128

\* Not required for Budget Activities 1, 2, 3, and 6

UNCLASSIFIED

Exhibit R-3, Project Cost Analysis  
(Exhibit R-3, page 8 of 26)

**UNCLASSIFIED**

**CLASSIFICATION:**

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R-1 SHOPPING LIST - Item No. 128

**UNCLASSIFIED**

**Exhibit R-3, Project Cost Analysis**  
(Exhibit R-3, page 9 of 26)

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## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>		PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE-ENGAGE			PROJECT NUMBER AND NAME 9081 / PHALANX CIWS SEA RAM			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		9.996	3.955	17.931	9.972	0.000	0.000	0.000
RDT&E Articles Qty								

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:** The purpose of this ECP effort is to combine the PHALANX CIWS radar with the Rolling Airframe Missile (RAM) Block 1 Missile System. The overall SeaRAM strategy is to field a low-risk-development cost system utilizing the proven capabilities and infrastructure of the RAM and PHALANX CIWS systems. This U.S. Navy SeaRAM development leverages the successful demonstration by the United Kingdom of an industry prototype system aboard the HMS York. The SeaRAM ORDALT ECP will provide improved detection and performance capabilities in a stand-alone self-defense system that will defeat the near-term, stressing Anti-Ship Cruise Missile (ASCM) threats. The FY03 and FY04 Congressional Plus-ups continue the U.S. Navy system/software engineering of the SeaRAM ORDALT ECP. FY05-06 Funding completes development and testing of the ECP.

# UNCLASSIFIED

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<b>B. Accomplishments/Planned Program</b>														
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Travel			0.030											
RDT&E Articles Quantity														

R-1 SHOPPING LIST - Item No. 128

# UNCLASSIFIED

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>	PROGRAM ELEMENT NUMBER AND NAME 0604756N SHIP SELF DEFENSE (ENGAGE: HARD KILL)	PROJECT NUMBER AND NAME 9081 / PHALANX CIWS SEARAM

**C. PROGRAM CHANGE SUMMARY:**

Funding:	FY 2003	FY 2004	FY 2005
Previous President's Budget	10.269	0.000	0.000
Current BES/President's Budget Submit	9.996	3.955	17.931
Total Adjustments	-0.273	3.955	17.931
Summary of Adjustments			
SeaRAM R&D	0.000	0.000	18.000
FY03_SBIR_5-May-03	-0.273	0.000	0.000
Section 8094: Management Impr		-0.011	
Sec. 8126: Efficiencies/Revis		-0.034	
Phalanx SeaRAM		4.000	
PBD-604 Inflation			-0.048
PBD604 non purchase inflation			-0.010
FY05 ITR Balancing			-0.011
Subtotal	-0.273	3.955	17.931

Schedule:

FY03 and FY04 Congressional Plus-ups continue development of SeaRAM System for the RAM MK31 Guided Missile Weapons System.  
FY05 funding is for continued development and testing.

Technical:

Not Applicable.

R-1 SHOPPING LIST - Item No. 128

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<b>D. OTHER PROGRAM FUNDING SUMMARY:</b>									
<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN LINE 523800 (RAM)	\$27.115	\$31.068	\$22.968	\$77.792	\$69.811	\$34.822	\$11.045	\$63.771	\$857.376
WPN LINE 224200 (RAM)	\$59.163	\$47.956	\$47.412	\$135.900	\$70.311	\$99.219	\$102.197	\$555.700	\$1,298.000
<b>E. ACQUISITION STRATEGY:</b>									
SeaRAM Development and Testing									
<b>F. MAJOR PERFORMERS:</b>									
Raytheon Systems Company - Tucson, AZ - RAM Prime Contractor for Development. Award Date: FY03 - 2/03; FY04 - 02/04; FY05 -11/04.									

R-1 SHOPPING LIST - Item No. 128

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RDT&E, N / BA-05			0604756N SHIP SELF DEFENSE (ENGAGE: HARD KILL			K9081 / PHALANX CIWS SEARAM						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Raytheon, Tucson AZ & Louisville, KY		9.996	02/03	3.955	02/04	6.901	11/04	Continuing	Continuing	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration	SS/CPFF	Raytheon, Tucson AZ & Louisville, KY						3.500	11/04	Continuing	Continuing	
Ship Suitability												
Systems Engineering	IPR	TSC Bird						0.500	11/04	Continuing	Continuing	
Training Development												
Studies/Analysis	CPFF	APL						0.500	11/04	Continuing	Continuing	
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	9.996		3.955		11.401		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

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## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDTE&amp;E, N / BA-05</b>			PROGRAM ELEMENT 0604756N SHIP SELF DEFENSE (ENGAGE: HARD KILL				PROJECT NUMBER AND NAME 9081 / PHALANX CIWS SEARAM					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Contractor Test & Evaluation	SS/CPAF	Raytheon, Tucson AZ & Louisville, KY		0.000				3.000	11/04	Continuing	Continuing	
CT,DT&E, OT	WX	NSWC/PHD& China Lake						3.500	11/04	Continuing	Continuing	
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		6.500		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel								0.030	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.030		Continuing	Continuing	
Remarks:												
Total Cost			0.000	9.996		3.955		17.931		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 128

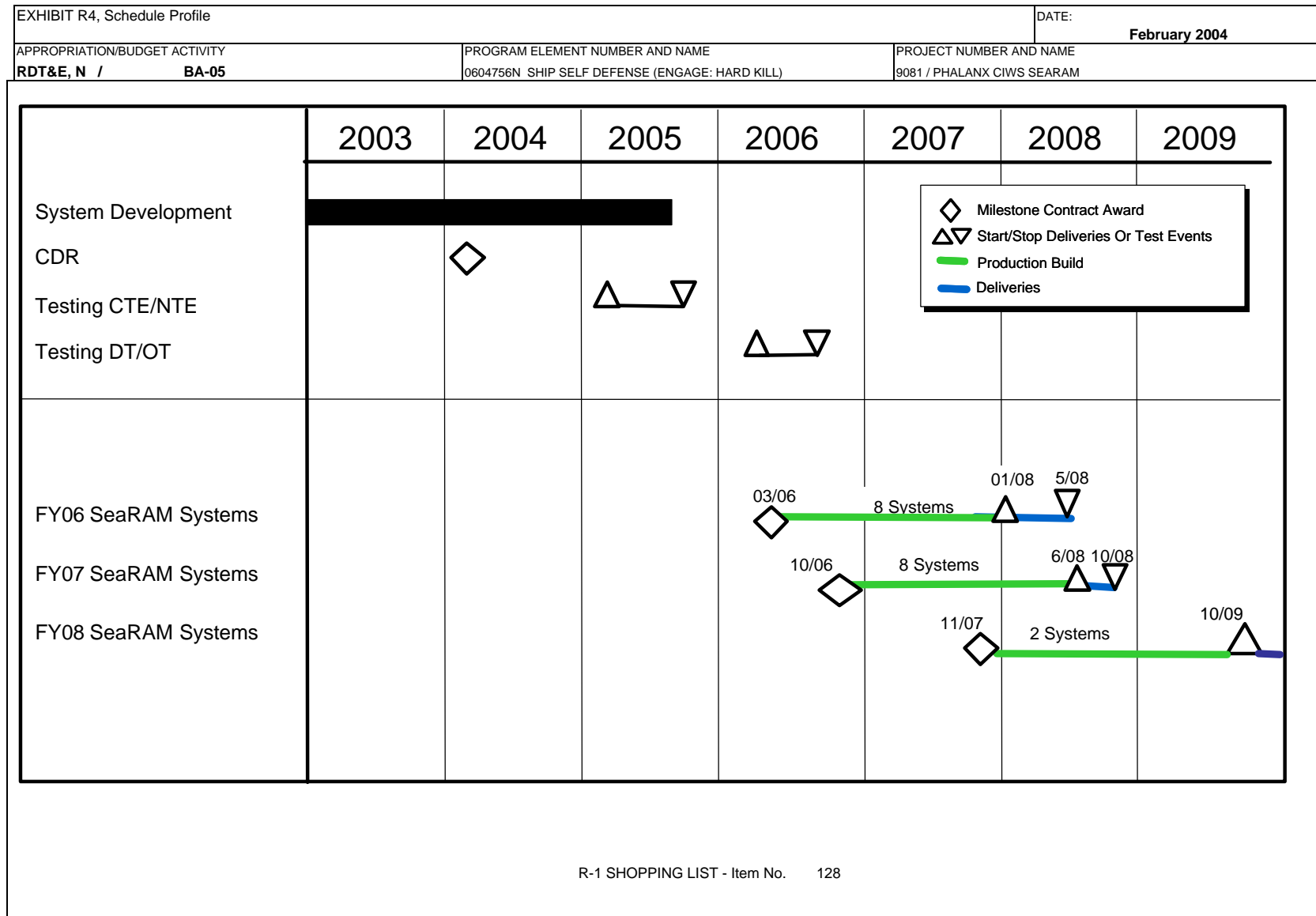
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Exhibit R-2a, RDTE Project Justification  
(Exhibit R-2a, page 15 of 26)

UNCLASSIFIED

R-4

CLASSIFICATION:



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# UNCLASSIFIED

## CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: <b>February 2004</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>			PROJECT NUMBER AND NAME 9081 / PHALANX CIWS SEARAM			
Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
DEVELOPMENT						
Contract Award/Modification	2Q	1Q	1Q			
Critical Design Review (CDR)	2Q					
System Development	1Q-4Q	1Q-4Q				
System CTE/NTE		2Q-4Q				
DT/OT			2Q-4Q			
PRODUCTION						
FY06 FRP Contract Award			2Q			
FY06 FRP Deliveries					2Q-3Q	
FY07 FRP Contract Award				1Q		
FY07 FRP Deliveries					3Q-4Q	1Q
FY08 FRP Contract Award					1Q	
FY08 FRP Deliveries						

R-1 SHOPPING LIST - Item No. 128

UNCLASSIFIED

Exhibit R-4, Schedule Profile  
(Exhibit R-4, page 17 of 26)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME <b>SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N</b>			PROJECT NUMBER AND NAME <b>NATO SEASPARROW/0173</b>			
COST (\$ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		<b>5.779</b>	<b>15.368</b>	<b>21.351</b>	<b>5.642</b>	<b>4.868</b>	<b>4.938</b>	<b>5.029</b>
RDT&E Articles Qty								
<p><b>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</b></p> <p>This project encompasses two (2) primary efforts to enhance ship self defense:</p> <p>1. (U) EVOLVED SEASPARROW MISSILE (ESSM): A cooperative effort among 10 NATO SEASPARROW Nations, including the U.S., to improve the capability of the SEASPARROW Missile to counter the low altitude, highly maneuverable Anti-Ship Cruise Missile threat. The program consists of evolving the SEASPARROW Missile through the development of a new rocket motor with tail control; thrust vector control and ordnance (warhead) upgrade; modifications to the MK 41 VLS to fire from a single cell with 4 ESSM (QuadPack); and modifications to the NATO SEASPARROW Missile System (NSSMS) to provide ESSM capability. FY03 introduces the upgrade of the MK 29 GMLS. The MK 29/ESSM Launcher Upgrade will provide the CV/ CVN/ LHD class ships with an affordable light weight means of employing ESSM.</p> <p>2. (U) NATO SEASPARROW - MK 91 Rearchitecture/SDSMS: The MK 91 Rearchitecture Program integrates NSSMS into the Ship Self Defense System (SSDS) Architecture to provide ship missile defense utilizing an open architected system. This effort consists of combining the Firing Officer Console and Radar Set Console functionality into a single Advanced Display System Console (AN/UYQ-70); modifying the Signal Data Processor and eliminating the MK 157 Computer Signal Data Converter and System Evaluation and Trainer, and redistributing this functionality within SSDS compatible microprocessors. This approach will eliminate the analog, point-to-point architecture, limited input-output channel and computer processing reserve deficiencies resident in the existing MK 57 NSSMS, and is required for ESSM. This modification also allows for full exploitation of the capabilities of the future ESSM and provides significant reductions (over 50%) in NSSMS cost of ownership and manning requirements.</p>								

R-1 SHOPPING LIST - Item No.

128

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / 5</b>	PROGRAM ELEMENT NUMBER AND NAME <b>SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N</b>	PROJECT NUMBER AND NAME <b>NATO SEASPARROW/0173</b>																	
<b>B. Accomplishments/Planned Program</b>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 10%;"></td> <td style="width: 20%; text-align: center;">FY 03</td> <td style="width: 20%; text-align: center;">FY 04</td> <td style="width: 20%; text-align: center;">FY 05</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">2.624</td> <td style="text-align: center;">3.187</td> <td style="text-align: center;">2.126</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		2.624	3.187	2.126	RDT&E Articles Quantity				
		FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		2.624	3.187	2.126															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p>Continued AEGIS S Band development. Conducted U.S. Unique DT-IIC/OT-IIC firings on SDTS and TECHEVAL/OPEVAL (DT-IIE/OT-IID) on AEGIS platforms. Correct engineering deficiencies identified as a result of TECHEVAL / OPEVAL. This provides for the U.S. share of Cooperative efforts associated with ESSM engineering studies and other development Initiatives.</p> </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 10%;"></td> <td style="width: 20%; text-align: center;">FY 03</td> <td style="width: 20%; text-align: center;">FY 04</td> <td style="width: 20%; text-align: center;">FY 05</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">0.734</td> <td style="text-align: center;">7.136</td> <td style="text-align: center;">3.891</td> </tr> <tr> <td>RDT&amp;E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		0.734	7.136	3.891	RDT&E Articles Quantity				
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Accomplishments/Effort/Subtotal Cost		0.734	7.136	3.891															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p>Development:Utilizing existing technology and the Mk 29 Trainable Launcher, develop a program for the adaptation and U.S. certification of the launching system and make available for U.S. Navy deployment. Provide for the development to accommodate Evolved SEASPARROW Missiles which will provide full dimensional protection against the evolutionary threat of ASCMs on non-AEGIS platforms. Conduct restrained firings and DT/OT on the Self Defense Test ship in the third quarter of FY 04. Development completed in FY 05.</p> </div>																			
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RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"> <p>Introduces Test and Evaluation of the ESSM Baseline Missile software for CV/CVNs. The CV/CVN/LHD Classes will see introduction of ESSM in FY 05 with the MK29/ESSM Launcher. RNSSMS/SSDS MK 2. FOT &amp;E will be required to validate Combat system effectiveness.</p> </div>																			

R-1 SHOPPING LIST - Item No. 128

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Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, page 19 of 26)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / 5</b>	PROGRAM ELEMENT NUMBER AND NAME <b>SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N</b>	PROJECT NUMBER AND NAME <b>NATO SEASPARROW/0173</b>		
<b>B. Accomplishments/Planned Program (Cont.)</b>				
		FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		2.421	3.200	7.781
RDT&E Articles Quantity				
<p>FY 03/04/05: SSDS Post Integration: Building upon the current NSSMS MK 57 Mod 4 - 9 upgrade (Re-architected NSSMS) that provided an initial capability with SSDS MK 2 in support of the Maritime Force Protection (MFP) program, evolve the fire control system component to implement the additional organic capabilities required by the MFP Performance &amp; Compatibility Requirements (P&amp;CR) for CVNs. This effort will maintain compatibility with RNSSMS and evolving Next Generation Ship Defense post SSDS Mk 2, fully exploit RNSSMS performance capabilities, and develop RNSSMS capabilities consistent with the full-approved Integration Specifications. It will also support the evolutionary weapons and control system development to counter future evolving threats. Efforts scheduled for completion in FY 05.</p>				

R-1 SHOPPING LIST - Item No. 128

UNCLASSIFIED

Exhibit R-2a, RDTEN Project Justification  
(Exhibit R-2a, page 20 of 26)

# UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification			DATE: <b>February 2004</b>																																																																	
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<p><b>C. PROGRAM CHANGE SUMMARY:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;"></th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget: (FY 04 Pres Controls)</td> <td style="text-align: right;">8.585</td> <td style="text-align: right;">18.043</td> <td style="text-align: right;">21.482</td> </tr> <tr> <td>FY05 PRES Controls</td> <td style="text-align: right;">5.779</td> <td style="text-align: right;">15.368</td> <td style="text-align: right;">21.351</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-2.806</td> <td style="text-align: right; border-top: 1px solid black;">-2.675</td> <td style="text-align: right; border-top: 1px solid black;">-0.131</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>MANAGEMENT IMPROVEMENT</td> <td></td> <td style="text-align: right;">-0.043</td> <td></td> </tr> <tr> <td>Congressional adjustment</td> <td></td> <td style="text-align: right;">-2.500</td> <td></td> </tr> <tr> <td>Programatic Adjustment</td> <td style="text-align: right;">-0.022</td> <td></td> <td></td> </tr> <tr> <td>Efficiencies</td> <td></td> <td style="text-align: right;">-0.132</td> <td></td> </tr> <tr> <td>SBIR</td> <td style="text-align: right;">-0.193</td> <td></td> <td></td> </tr> <tr> <td>Economic Adjustments</td> <td></td> <td></td> <td style="text-align: right;">-0.082</td> </tr> <tr> <td>NSWC rate change</td> <td></td> <td></td> <td style="text-align: right;">-0.049</td> </tr> <tr> <td>Midyear Adjustment</td> <td style="text-align: right;">-1.943</td> <td></td> <td></td> </tr> <tr> <td>Administrative Adjustment</td> <td style="text-align: right;">-0.648</td> <td></td> <td></td> </tr> <tr> <td><b>Subtotal</b></td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;"><b>-2.806</b></td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;"><b>-2.675</b></td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;"><b>-0.131</b></td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-top: 20px;">Technical:</p> <p style="margin-left: 40px;">"Not Applicable."</p> <div style="text-align: right; margin-top: 20px;">PBD-604 Nonpay Purchase Inflation</div>						FY 2003	FY 2004	FY 2005	Funding:				Previous President's Budget: (FY 04 Pres Controls)	8.585	18.043	21.482	FY05 PRES Controls	5.779	15.368	21.351	Total Adjustments	-2.806	-2.675	-0.131	Summary of Adjustments				MANAGEMENT IMPROVEMENT		-0.043		Congressional adjustment		-2.500		Programatic Adjustment	-0.022			Efficiencies		-0.132		SBIR	-0.193			Economic Adjustments			-0.082	NSWC rate change			-0.049	Midyear Adjustment	-1.943			Administrative Adjustment	-0.648			<b>Subtotal</b>	<b>-2.806</b>	<b>-2.675</b>	<b>-0.131</b>
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R-1 SHOPPING LIST - Item No. 128

UNCLASSIFIED

Exhibit R-2a, RD TEN Project Justification  
(Exhibit R-2a, page 21 of 26)

# UNCLASSIFIED

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2004</b>																																										
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME <b>SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N</b>			PROJECT NUMBER AND NAME <b>NATO SEASPARROW/0173</b>																																												
<b>D. OTHER PROGRAM FUNDING SUMMARY:</b> <table border="1"> <thead> <tr> <th><u>Line Item No. &amp; Name</u></th> <th><u>FY 2003</u></th> <th><u>FY 2004</u></th> <th><u>FY 2005</u></th> <th><u>FY 2006</u></th> <th><u>FY 2007</u></th> <th><u>FY 2008</u></th> <th><u>FY 2009</u></th> <th><u>To Complete</u></th> <th><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>WPN BA-2 Other Missiles, Evolved SEASPARROW (ESSM) (230700)</td> <td>42.0</td> <td>102.0</td> <td>80.3</td> <td>99.1</td> <td>99.1</td> <td>115.9</td> <td>98.6</td> <td>338.4</td> <td>1092.6</td> </tr> <tr> <td>OPN BA-4 NATO SEASPARROW (523700, 523705)</td> <td>40.5</td> <td>32.6</td> <td>25.5</td> <td>40.7</td> <td>7.0</td> <td>30.8</td> <td>14.5</td> <td>CONT</td> <td>CONT</td> </tr> <tr> <td>Related RDT&amp;E:</td> <td colspan="9">           PE 0603609N (Conventional Munitions)            PE 0604307N (AEGIS Combat System Engineering)            PE 0604755N (K2178 Quick Reaction Combat Capability (QRCC))         </td> </tr> </tbody> </table>										<u>Line Item No. &amp; Name</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>	WPN BA-2 Other Missiles, Evolved SEASPARROW (ESSM) (230700)	42.0	102.0	80.3	99.1	99.1	115.9	98.6	338.4	1092.6	OPN BA-4 NATO SEASPARROW (523700, 523705)	40.5	32.6	25.5	40.7	7.0	30.8	14.5	CONT	CONT	Related RDT&E:	PE 0603609N (Conventional Munitions) PE 0604307N (AEGIS Combat System Engineering) PE 0604755N (K2178 Quick Reaction Combat Capability (QRCC))								
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<b>E. ACQUISITION STRATEGY: *</b> <p>ESSM is a directed sole source contract to Raytheon Missile Systems Company for LRIP, and upon successful completion of TECHEVAL/OPEVAL in FY 03, entering into Full Rate Production FY 04. Multi-year full rate production is the preferred approach for the NATO SEASPARROW Consortium.</p>																																																	
<b>F. MAJOR PERFORMERS:</b> <ol style="list-style-type: none"> <li>1. Raytheon Missile Co. Tuscon 2/04, 11/04 ESSM Testing/ Engineering support</li> <li>2. Raytheon Company (IDS) Portsmouth R.I. - MK 29 GMLS/ESSM Dev 2/04</li> <li>3. Naval Air Weapons Center China Lake, Point Mugu CA - Missile TDA supporting Development/Testing Funding under SEATASKs to field activities 10/03, 10/04</li> <li>4. Naval Surface Warfare Center - Port Hueneme CA., Dahlgren Va - provide ISEA support to ESSM in development testing. Dahlgren - Performs safety analysis/Development testing. Funding issued under SEATASKs to field activities 10/03, 10/04</li> </ol>																																																	

R-1 SHOPPING LIST - Item No. 128

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## CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2004				
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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ESSM-Primary Hardware Development	LC/CPAF	RAYTHEON	141.230	0.000				2.126	11/04	Continuing	Continuing	
	RX	TDW	3.746								3.746	3.746
Ancillary Hardware Development	CPAF	LOCKHEED/UDLP	46.706								46.706	46.706
Systems Engineering	VARIOUS	VARIOUS	22.622								22.622	22.622
MK 29/ESSM Launcher Upgrade	LC/CPAF	RAYTHEON SYS	0.000	0.734	01/03	7.136	02/04	3.891	10/04	Continuing	Continuing	
NATO-Primary Hdwe Dev	CPFF	RAYTHEON SYS	30.627							0.000	30.627	30.627
Software development / Test	CPFF	RAYTHEON SYS	2.346			0.985	01/04	1.650	12/04	Continuing	Continuing	
Systems Engineering		VARIOUS	5.306								5.306	
SSDS Integration	CPFF	RAYTHEON SYS	0.000	1.846	01/03	3.200	01/04	7.690	10/04	Continuing	Continuing	
Subtotal Product Development			252.583	2.580		11.321		15.357		Continuing	Continuing	
Remarks: 1 Currently this funding is on FMB HOLD- \$343K has been obligated in support of Source Selection Process. In the event CNO decision is to go with the MK 29 ORDALT upgrade - funds will go on contract to Raytheon Systems. The \$2,591K for the ESSM Launcher was taken by NAVCOMPT as part of mid-year action.												
ESSM / NATO												
Integrated Logistics Support	WR	NSWC PHD	3.568								3.568	
Engr Support	WX	VARIOUS	3.895			0.300	10/03	0.312	10/04	Continuing	Continuing	
MK 29/ESSM Launcher Upgrade	WX	Dahlgren/PHD	0.000	0.375							0.375	
Integrated Logistics Support	WX	NSWC PHD	0.000			0.385	10/03			Continuing	Continuing	
Engr Support	WX	VARIOUS	0.000			0.195	10/03			Continuing	Continuing	
NATO-MK 91/SDSMS			0.000									
ENGR SUPPORT	WX	VARIOUS	5.617	0.200	10/02	0.300	10/03	0.320	10/04	Continuing	Continuing	
Integrated Logistics Support	WX	NSWC PHD	0.000	0.081	10/02			0.181	10/04	Continuing	Continuing	
Subtotal Support			13.080	0.656		1.180		0.813		Continuing	Continuing	
Remarks:												

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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WR	NAWC CL	12.374	0.600	05/03						12.974		
SDTS/DT OT 11C	WR	PT Mugu	0.000								0.000		
OPEVAL/TECHEVAL	WR	VARIOUS(Corona, IHD,Dalhgren,NSWC PHD)	5.694	0.190	01/03	0.849	01/04	3.005	11/04		9.738		
Developmental Test & Evaluation	CPFF	APL	0.000	0.506	02/03	0.435		0.523		Continuing	Continuing		
Developmental Test & Evaluation	WR	DALHGREN	0.000			0.200		0.218		Continuing	Continuing		
Subtotal T&E			18.068	1.296		1.484		3.746		Continuing	Continuing		
Remarks:													
ESSM-ENGR SPT	WX	VARIOUS	4.258	0.165	11/02	0.240	VARIOUS	0.250	VARIOUS	Continuing	Continuing		
ESSM-PM SPT	WX	VARIOUS	0.498								0.498		
ESSM-LABOR	PD/WX		5.013	0.845	10/02	0.855	10/03	0.860	10/04	Continuing	Continuing		
ESSM - TRAVEL	PD/WX		1.410	0.187	10/02	0.200	10/03	0.225	10/04	Continuing	Continuing		
ESSM- MISC	VARIOUS	VARIOUS	2.035			0.010	10/03	0.020	10/04	Continuing	Continuing		
NATO TRAVEL/MISC	PD/WX	VARIOUS	1.483	0.050	10/02	0.078	10/03	0.080	10/04	Continuing	Continuing		
Subtotal Management			14.697	1.247		1.383		1.435		Continuing	Continuing		
Remarks:													
Total Cost			298.428	5.779		15.368		21.351		Continuing	Continuing		
Remarks:													

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE:

February 2004

APPROPRIATION/BUDGET ACTIVITY

RDT&amp;E, N / BA-5

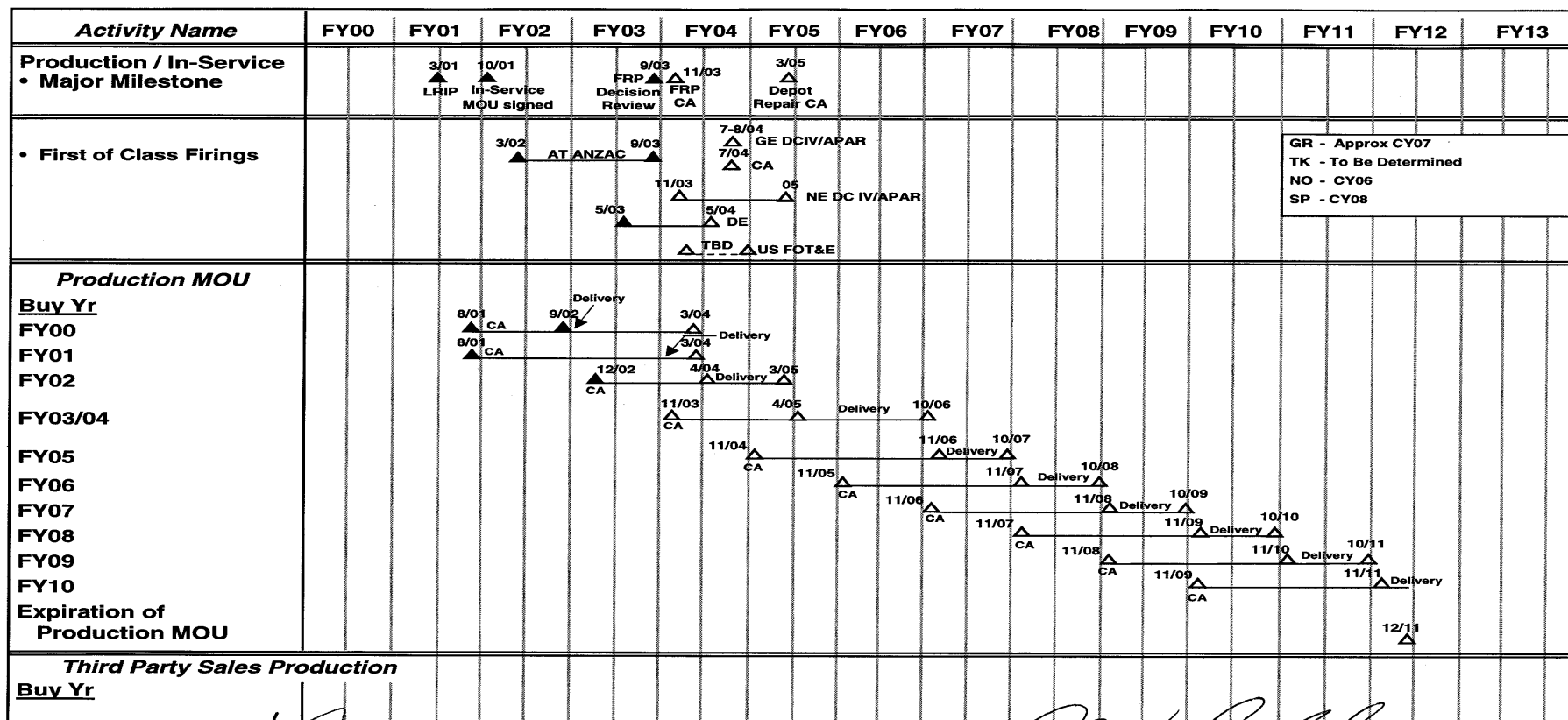
PROGRAM ELEMENT NUMBER AND NAME

SHIP SELF DEFENSE(Engage: Hard Kill) 0604756N


PROJECT NUMBER AND NAME

NATO SEASPARROW/0173

# Master ESSM Program Schedule

 October 2003  
REV 13

 GR - Approx CY07  
 TK - To Be Determined  
 NO - CY06  
 SP - CY08

  
 CAPT B. Cramp, Project Manager

  
 Director, Project Operations Division

  
 Director, ESSM Division

78th Decisions.11/3/2003

R-1 SHOPPING LIST - Item No. 128

\* Not required for Budget Activities 1, 2, 3, and 6

UNCLASSIFIED

 Exhibit R-4, Schedule Profile  
 (Exhibit R-4, page 25 of 26)

**UNCLASSIFIED**

**CLASSIFICATION:**

[illegible]

R-1 SHOPPING LIST - Item No. 128

**UNCLASSIFIED**

**Exhibit R-4, Schedule Profile**  
(Exhibit R-4, page 26 of 26)